

**Notice of Allowability**

Application No.

10/780,417

Applicant(s)

TUSTANIWSKYJ ET AL.

Examiner

Arleen M. Vazquez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/17/2006.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**HA TRAN NGUYEN**  
**SUPERVISORY PATENT EXAMINER**

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 07/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. The application has been amended as follows:

In the specification, page 1 line 13 ...chips ar packaged, ... has been changed to ...chips are packaged,...; page 2 line 31 ...undergoes the abov described... has been changed to ...undergoes the above described...; page 3 line 1 ... US pat nt... has been changed to ...US patent...; page 3 line 2 ...5,812,505... has been changed to ...5,821,505...; page 4 line 30...the s cond...has been changed to ...the second...; page 4 line 31 ...fe dback circuit senses th instantaneous pow r to the... has been changed to ... feedback circuit senses the instantaneous power to the...;page 5 line 1 ...el ctric h ater... has been changed to ...electric heater...;page 6 line 19 ... the pow r to the h ater... has been changed to ...the power to the heater...;page 7 line 21 ...internal structur of the vaporator... has been changed to ...internal structure of the evaporator...;page 10 line 1 ...opens for th ... has been changed to ...opens for the...;page 10 line 30 ...electrical pow r... has been changed to ... electrical power...; page 11 line 31 ... tog th r... has been changed to ...together...;page 12 line 1 ...the

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power supply... has been changed to ...the power supply...;page 12 line 31 ...flow rate that reduces the... has been changed to ...flow rate that reduces the...; page 13 line 1 ...overall... has been changed to ...overall...;page 14 line 28 ...the thermal power... has been changed to ...the thermal power...;page 14 line 29 ... electrical power... has been changed to ... electrical power...;page 14 line 29 ...is sent to the heater... has been changed to ... is sent to the heater...; page 15 line 1 ...Suppose now... has been changed to ...Suppose now...; page 15 line 1 ...increases to a higher level... has been changed to ...increases to a higher level...;page 16 line 1 ...power... has been changed to ...power...; page 16 line 1 ..., the... has been changed to ..., the...; page 16 line 30 ...more efficient. A numerical... has been changed to ...more efficient. A numerical...; page 17 line 1 ...is raised... has been changed to ... is raised...; page 17 line 31 ...constant temperature... has been changed to ...constant temperature...; page 19 line 30 ...the heater control... has been changed to ...the heater control...; page 19 line 31 ...27 operate over... has been changed to ...27 operate over...;page 20 line 1 ..., time increases... has been changed to ..., time increases...; page 20 line 30 ... 27 increases the flow... has been changed to ...27 increases the flow...; page 21 line 30 ... below the upper... has been changed to ... below the upper...; page 23 line 1 ... the average heater power... has been changed to ...the average heater power...; page 23 line 30 ...identified below in... has been changed to ...identified below in...; page 25 line 1 ...Component... has been changed to ...Component...; page 27 line 1 ...temperature... has been changed to ...temperature...; page 28 line 31 ...received by components 54 and 61. Then in... has been changed to ...received by components 54 and 61. Then

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in...; page 29 line 1 ... proc ssed... has been changed to ...processed...; page 29 line 32 ...modulat d signal which opens valv 22 compl tely... has been changed to ...modulated signal which opens valve 22 completely...; page 30 line 30 ...is p rformed is disclos d... has been changed to ...is performed is disclosed...; page 30 line 31 ... the pr sent... has been changed to ...the present...;page 32 line 1 ...to th ... has been changed to ...to the ...; line 30 ... can b a... has been changed to ...can be a...;line 32 ...another xample,... has been changed to ...another example,....

### ***Reasons for Allowance***

3. Claims 1-16 are allowed.

4. The following is an examiner's statement of reasons for allowance:

Claim 1 recites, A dual feedback control system for maintaining the temperature of an IC-chip near a set-point while said IC-chip dissipates a varying amount of electrical power; said system being comprised of an evaporator for a liquid refrigerant, and an electric heater which has one face that is connected directly to said evaporator and an opposite face for coupling to said IC-chip, an evaporator controller coupled to said evaporator, said evaporator controller including a second feedback circuit means for passing said liquid refrigerant to said evaporator with a variable flow rate that decreases as electrical power usage in said heater increases, and increases as electrical power usage in said heater decreases.

Claim 16 recites, A dual feedback control system for maintaining the temperature of an IC-chip near a set-point while said IC-chip dissipates a varying amount of electrical power; said system being comprised of a fluid cooled means, and an electric heater which has one face that is connected directly to said fluid cooled means and an opposite face for coupling to said IC-chip, a fluid controller coupled to said fluid cooled means, said fluid controller including a second feedback circuit means for passing said fluid to said fluid cooled means with a variable flow rate that decreases as electrical power usage in said heater increases, and increases as electrical power usage in said heater decreases.

These features in combination with other elements of the claims are neither disclosed nor suggested by the prior art of record.

Claims 2-15 depend from claim 1, they are allowed for the same reasons.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Rockenfeller et al. (US 5,271,239)*** discloses a "Cooling apparatus for electronic and computer components".


***Getchel et al. (US 6,802,368)*** discloses a "Temperature control system for a workpiece chuck".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arleen M. Vazquez whose telephone number is 571-272-2619. The examiner can normally be reached on Monday to Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMV

  
**HA TRAN NGUYEN**  
**SUPERVISORY PATENT EXAMINER**